

## ABSTRACTS

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### **Imcompatibility in wide hybridization of *Gossypium* species : causes and remedies-A review**

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**ABSTRACT :** A review of wide hybridization between incompatible species of indicated that pre and post fertilization barriers are involved in the incompatibility of crosses. Amongst these, failure of pollen germination and slow pollen tube growth are the main pre fertilization barriers while, post fertilization barriers includes, elimination of chromosomes and chromosomal abnormalities, hybrid inviability and hybrid sterility etc. are important. From the review it appeared that techniques viz., bridging species, using exogenous growth substance and immunosuppressants, pollen recognition, embryo rescue, *in vivo* and *in vitro* embryo culture, *in vitro* fertilization and ovule culture, mixed pollination, use of irradiation, use of stimulants, different pollination techniques and grafting etc. has played a important role in overcoming the incompatibility which successfully resulted to obtained difficult cross combinations, thus paved a way for introgression of desired genes from wild *Gossypium* species to cultigens.

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### **Integrated nutrient management practices on the production of cotton-maize-bengalgram sequence under irrigated ecosystem in tungabhadra project area**

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**ABSTRACT :** A field experiment was undertaken to study the response of hybrid cotton during kharif 1998-99, maize and bengalgram during 1999-2000 *kharif* and *rabi*, respectively to organic and inorganic sources of nutrients in black soils under irrigated condition at Agricultural Research Station, Siruguppa. The experiment was laid out in split plot design with eight sources of organics as main plots and three levels of NPK as sub plots with three replicatios. The results of the experiment indicated that application of FYM @ 10 t/ha has given highest seed cotton yield (1129 kg/ha) over CCR (954 kg/ha) and VC (967 kg/ha). The yield increase was about 17 per cent over VC and 18 per cent over CCR. Where as in maize, application of FYM @ 10 t/ha has recorded the highest grain (2568 kg/ha) and straw (6979 kg/ha) yield and it was followed by application of 50 per cent each of FYM+VC (2201 kg/ha and 6572 kg/ha of grain and straw yield, respectively). Further, cotton and maize yield were increased with every increment in the levels of RDF. Application of 100 per cent RDF has recorded highest cotton and maize yields as compared to zero per cent RDF. Bengalgram yields were on *par* between 50 per cent and 100 per cent RDF and additional 358 kg/ha was observed due to application of 50 per cent RDF as compared to zero per cent RDF. Interaction effects were found to be nonsignificant in cotton and maize yield. However, the effects were significant in bengalgram. The maximum seed yield (2070 kg/ha) was noticed at 50 per cent RDF application with the residual effect of FYM+VC (50% each).

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## **Comparative performance of cotton genotypes under different soil depth**

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**ABSTRACT :** Field experiments were conducted from 1993 to 1996, to study the performance of *G. arboreum*, *G. hirsutum* and *intra-hirsutum* hybrids genotypes under medium (<60 cm soil depth) and deep (>60 cm soil depth) soils. Results revealed that on deep soils hybrid JKHy-1 exhibited superior over all types of *G. arboreum* and *G. hirsutum*, though it appeared at *par* to JKHy-2. *G. arboreum* varieties viz. Jawahar Tapti and Malijari performance better in all types of soils in comparison to *G. hirsutum* varieties Khandwa-3 and LRA-5166. Similarly the pooled data on seed cotton yield was found to be increased by 4.78 per cent of *G. arboreum*, 13.21 per cent *G. hirsutum* and 30.83 per cent *intra hirsutum* hybrids when grown on deep soils as compared to medium soils.

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## **Weed management in American cotton (*Gossypium hirsutum* L.)**

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**ABSTRACT :** A field experiment was conducted at Agricultural Research Station, Sriganagar, to find out the feasibility of different chemical weed control measures used alone or in combination with hand hoeing for consecutively 2 years (1998 to 1999). Significantly higher yield attributes, weed intensity and weed control efficiency were recorded with farmers practice i.e. one hand hoeing at 35 days after sowing+2 intercultural operations after 1st and 2nd irrigation, and this treatment gave statistically at par yield, yield attributes, weed intensity, weed control efficiency, and water use efficiency with the pre-planting application of pendimethalin and tryfluralin @ 1.5 kg a. i./ha+one hoeing at 35 DAS. However, all the weed control measures significantly influenced the seed cotton yield in comparison with unweeded check. Highest field water use efficiency was recorded with farmers practices followed by pendimethalin and tryfluralin chemical weed control.

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## **Effect of mussoorie rockphosphate (MRP) plus phosphobacteria on the growth, yield components and yield of cotton hybrids**

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**ABSTRACT :** A field experiment was conducted at Tamil Nadu Agricultural University, Coimbatore to study the effect of mussoorie rockphosphate along with phosphobacteria on the growth and yield of cotton hybrids (TCHB 213 and HB 224). The results revealed that the interspecific hybrid TCHB 213 (*Gossypium hirsutum* x *G. barbadense*) had overall higher expression in respect of growth components (Plant height, LAI and DMP) and yield components (number of sympodial branches/plant, bolls/plant, boll weight and setting per cent) and recording the higher seed cotton yield (1710 kg/ha). Among the phosphorus treatments, 100 per cent MRP enriched with FYM+phosphobacteria produced increased growth and yield components and also higher seed cotton yield (1945) and this treatment recorded maximum seed cotton yield (1998 and 1892 kg/ha) with both the hybrids studied.

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## **Response of compact and early maturing cotton genotypes to plant population levels under rainfed conditions**

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**ABSTRACT :** A field experiment was conducted at Agricultural Research Station, Dharwad to find out optimum spacing for different compact and early maturing cotton genotypes under assured rainfall conditions. The experiment was conducted for two seasons from 1996-97 to 1997-98. It was observed that compact genotypes AH-107, CPD-446, CPD-447, CPD-448 have produced on par yield levels, but they have given 12.7 to 14.0 per cent higher yields as compared to check variety Anjali. The recommended spacing of 60 x 30 cm found optimum as compared to other levels. Reduction in the intra row spacing from 30 to 15 cm reduced the cotton yields.

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## **Effect of spacing and fertilizer on inter specific hybrid-DHB-105 under irrigated conditions**

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**ABSTRACT :** A field experiment was conducted under irrigation to find out the optimum spacing and fertilizer level to interspecific hybrid cotton DHB-105, at ARS, Siruguppa from 1993-94 to 1995-96. Among the three spacing levels tested, 120 x 60 cm was found to be optimum (1770 kg/ha) followed by 90 x 60 cm and 60 x 60 cm spacings. Application of higher dose fertilizers 200 : 100 : 100 NPK kg/ha was significantly superior to recommended dose of 150 : 75 : 75 kg NPK/ha and lower dose of 100 : 50 : 50 kg NPK/ha. Spacing of 120 x 60 cm with 200 : 100 : 100 kg NPK/ha has produced significantly higher yield (10.2 to 42 per cent) than other treatment combinations during 1994-95 only and not significant during remaining two years.

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## **Rainfed cotton based cropping systems *vis-a-vis* insect pest infestations**

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**ABSTRACT :** The temporal and spatial diversity of rainfed cotton based cropping systems (RCBCS) affecting incidence of sucking and bollworm pests in cotton was studied through field experiments under rainfed dominated central zone of India at Nagpur. Intercrops of black gram, green gram and soybean, strip and border crops of early and late varieties of red gram, and border crop of bhendi were tested along with sole crop of cotton cultivar LRA 5166. None of the RCBCS had any effects on cotton insect pests except on the late season pink bollworm *Pectinophora gossypiella* (Saunders). Highest (14.8%) and the lowest (2.9%) *P. gossypiella* incidence was observed on cotton intercropped with black gram and soybean, respectively. Intercropping influenced the growth, development and maturity of cotton, in turn affected *P. gossypiella* damage. Among the associated border crops of RCBCS, bhendi showed promise as a trap crop for *Earias vittella* (Fab.) and *Helicoverpa armigera* (Hubner) by adopting its staggered sowing along with periodical removal of fruits besides restricted insecticidal sprays on it. Red gram served as an attractant

crop for population of *H. armigera* emerging from cotton after second week of October, implying the impact of chronology of cropping systems determining host availability and population dynamics of the pest. From systems, approach, adopting black gram as intercrop and the use of late variety of red gram as strip or border crop are effective and remunerative. Overall perspectives, based on yield and monetary returns, indicated more risk responsive nature of the RCBCS than their being insect pest interactive.

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## **Association studies between the components of intensive cotton development programme (ICDP-Cotton) during Ninth Plan period**

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**ABSTRACT :** Rank correlation has been estimated between components of ICDP-Cotton Program implemented during first four years of the Ninth Plan by Crops Division of the Department of Agriculture and Cooperation, Ministry of Agriculture in the major cotton growing states. Information obtained from implementing states on the components Demonstration, Distribution of certified seed, IPM demonstrations, distribution of sprayers, distribution of sprinkler sets and farmers training components has been used for the study. In general implementation for all the components over the years was more than 50 per cent. Positive association between achievements in components during the years 1997-98, 1999-2000 and 2000-01 indicated similar trend in implementation of the five components during these years. The trend of the achievements in implementation of the components was however, dissimilar for the year 1998-99 with 1999-2000 and 2000-01.